

## Tilburg University

### The Dutch Healthcare System in International Perspective

Mikkers, Misja

*Publication date:*  
2016

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication in Tilburg University Research Portal](#)

*Citation for published version (APA):*  
Mikkers, M. (2016). *The Dutch Healthcare System in International Perspective*. Tilburg University.

#### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

#### Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

# The Dutch healthcare system in international perspective

Inaugural address by  
Prof. dr. Misja Mikkers RA

**Misja Mikkers** (1968) is endowed Professor of Organization and Financing in the Healthcare Sector at the Department of Economics of Tilburg University.

He has also worked at the NZa (Dutch Healthcare Authority) since 2003, in different functions. Currently he holds the position of Chief Economist and manages the Economic and Medical Bureau. He is responsible for economic research on healthcare reforms and public health advice.

He obtained a PhD in economics from Copenhagen University with a dissertation on the theory and practice of regulatory design.

The chair is being sponsored by the NZa.

# The Dutch healthcare system in international perspective

**Prof. dr. Misja Mikkers RA**

## **Inaugural address**

to be delivered at Tilburg University on October 21, 2016 upon the public acceptance by Misja Mikkers of his appointment as Professor of Organization and Financing of the Healthcare Sector.

© Misja Mikkers, Tilburg University, 2016.

ISBN: 978-94-6167-287-2

All rights reserved. This publication is protected by copyright, and permission must be obtained from the publisher prior to any reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording or otherwise.

[www.tilburguniversity.edu/nl](http://www.tilburguniversity.edu/nl)

---

# *The Dutch healthcare system in international perspective*

# Introduction

Governments, policy makers and scientists in all countries need to understand how well their healthcare system performs. Every country in Europe is now contending with rapidly escalating costs in the healthcare sector, but at the same time we are also benefiting from better survival rates for cancer and heart attacks. Life expectancy among people in rich countries continues to rise and the adoption of new treatments and technologies (such as drugs to control HIV and proton therapy, a new way to treat cancer) is having a clear impact.

The evolution of the healthcare sector in economically developed countries has occurred in three distinct waves (Cutler 2002). The first wave involved ensuring better access to medical care. Since health technology was neither very advanced nor very costly at that time, equity rather than efficiency was the primary policy concern when healthcare systems were first set up. However, the rapid pace of technological change meant that, over time, ever more resources were being poured into hospital care to pay for nursing, intensive care, radiology and drug supplies. As both the scale and – ultimately – the cost of hospital services increased dramatically, healthcare became the largest sector of the economy in the majority of developed countries.

In response to this rapid, technology-driven increase in the cost of providing healthcare, many countries imposed regulatory limits on healthcare spending during what Cutler calls the second wave. Such rationing mechanisms included price controls, budget caps, and barriers to entry for both physicians (e.g. licensing) and hospitals (e.g. certificates-of-need). But these rationing mechanisms had two adverse effects for consumers. The first of these was waiting lists, which led to increasing consumer dissatisfaction. Secondly, they created inefficiencies in the provision of healthcare because cost controls led to both the suboptimal allocation of resources and limited incentives for providers to respond to consumers' needs.

Growing dissatisfaction with rationing among consumers of healthcare led to a shift towards incentive-based systems (such as greater competition and yardstick regulation) during the third wave of healthcare reform, which has been pursued the furthest in the United States, and more recently in European countries such as the Netherlands. Increased incentives for healthcare providers can lead to the better allocation of resources and make them more responsive to their competitive environment (competitors, suppliers, insurers and, ultimately, patients).



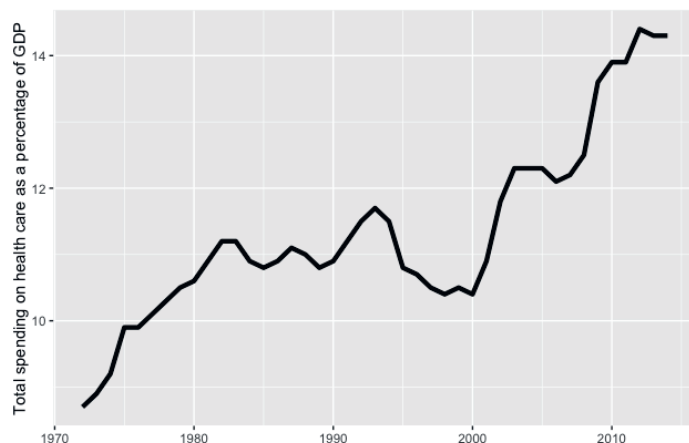


Figure 1: Total spending on healthcare in the Netherlands as a percentage of GDP.

An example of this is shown in Figure 1, which provides a historical overview of spending on healthcare in the Netherlands (expressed as percentage of GDP). The first two phases of Cutler (2002) can be seen in this Figure. In the first phase (which continued until the early 1980s) access and equity were the main goals of public policy. Insurance coverage was extended and more facilities were built, leading to an increase in healthcare expenditure.

In the early 1980s, the Netherlands entered the ‘second phase’, introducing budgets for healthcare providers (e.g. for hospitals in 1983 and medical specialists in 1986). Throughout the 1980s, the Netherlands managed to keep healthcare costs under control: spending on healthcare remained broadly stable as a percentage of GDP. However, by the 1990s the tighter budgets were leading to considerable public dissatisfaction due to waiting lists and perceived falls in the quality standards. In 2001 a new policy gave every citizen the right to access healthcare, which meant that waiting lists should disappear. As a consequence, however, healthcare spending rose sharply once again.

At this point, the government had a number of options for restraining expenditure and ensuring an affordable system of healthcare. The option of rationing healthcare through budgeting and price regulation has already been abandoned. Another option for curbing expenditure would be to limit the scope of mandatory insurance. This could be done by increasing co-payments and limiting the standard benefits package. This is possible in theory, but in practice

it would be difficult in political terms (see Dranove (2003) for an overview of the practice of rationing in a range of different countries). Instead, the Dutch government chose the path of reforming the healthcare system by introducing managed competition and incentives: Cultler's 'third wave' (2002).

In this address, I will discuss important aspects of the Dutch system of managed competition from the economic perspective, highlighting both its merits and the major challenges posed by the development of this system. Firstly, I will discuss the reasons why governments intervene in healthcare markets at all, and outline the different types of healthcare systems. Then I will describe the Dutch healthcare system and compare healthcare outcomes in different countries. I will conclude with some suggestions for improving the Dutch system.

### Public objectives

In countries where (price) competition<sup>1</sup> in the healthcare sector plays a role, competition is not a goal in itself but is seen as the best mechanism for delivering the key public policy objectives of:

- accessibility
- affordability
- quality

Healthcare needs to be accessible, by which we mean that individual patients are able to access hospital care when they need it, but also that patients are able to cover the cost of the treatment that they require. As we have seen, healthcare treatments have become very expensive, meaning that healthcare insurance plays a vital role. Since private insurance will not always be attainable for vulnerable groups (e.g. elderly), governments in all Western countries intervene in the health insurance market. Some governments provide state health insurance for all their citizens (e.g. the UK and Denmark), others offer a special government insurance scheme for vulnerable groups like the elderly (for example Medicare in the US), and others still require all their citizens to take out private (but state-regulated) insurance (which is the case in the Netherlands).

---

<sup>1</sup> In countries like the UK and Denmark there is no price competition, but hospitals are subject to some form of (quality) competition.

All countries share the same concerns about rises in healthcare spending. This is because in all countries – as we will see later in the address – healthcare expenditure remains on a steady upwards trajectory and makes up an ever larger share of national income. Since a large proportion of the cost of healthcare is covered collectively, countries need to make choices. Rising healthcare costs can either be covered by tax increases, which would mean that healthcare spending will crowd out public spending in other areas (such as education and social welfare), or a larger share of the cost of healthcare will need to be borne by patients.

Of course, we all want accessible and affordable healthcare, but spending money on healthcare only makes sense if we do this in a way that leads to good quality.

The three core objectives that we mentioned above – accessibility, affordability and quality – often conflict with one another. For example, we would normally assume that improving quality will involve cost increases, and so there is a clear conflict between quality and affordability. Another example is that providing greater accessibility (by increasing the insurance coverage or by building more facilities) may undermine affordability. And the goals of quality and accessibility may also conflict. For some treatments, there is a positive relationship between the volume of treatments and clinical outcomes (see Halm et al. 2002 for examples and a literature overview). To improve quality, it makes sense to concentrate these treatments, but this may require patients to travel further, implying a sacrifice in terms of accessibility.

In order to achieve these public policy objectives, the healthcare system must be structured and coordinated in such a way that the right services and products are produced at the right time, in the right place, by the right medical personnel. This coordination includes quality and accessibility. What is more, the healthcare system needs to incentivize individual decision makers (e.g. insurers, hospitals, doctors and so forth) to make coordinated decisions. In other words, individual decision makers must be incentivized at the individual level to produce healthcare that accords with public policy objectives. And finally, the healthcare system needs to provide this coordination and incentivization with the lowest possible transaction costs.

There are two contrasting approaches to achieving coordination. One approach

is hierarchical planning, whereby a central decision-maker calculates what all those involved need to do, and instructs or ‘commands’ them to do it. The other approach is the use of the market. This ‘invisible hand’ work through the gradual balancing of supply and demand, determining the overall plan which is, at the same time, implemented through decentralized responses to price changes.

From a theoretical point of view and assuming perfect information, the general characteristics of the market and hierarchical solutions are quite similar. The virtues of price mechanisms are often emphasized with reference to neo-classical microeconomics. According to the first and second welfare theorem in microeconomics, a perfect price mechanism will lead to a situation of Pareto optimality and, under certain conditions, Pareto optimality can be maintained as competitive equilibrium with certain prices. In other words, the same solutions are possible using both the market and planning. In reality, a planning approach can usually accomplish this using less restrictive assumptions about technologies and preferences. Traditional prices, for example, have problems supporting some Pareto optimal outcomes when production possibilities are not convex.

When the assumption of perfect information is relaxed and incentives and motivation becomes relevant, the two approaches diverge more and their performance naturally depends on who knows what. A common belief is that market solutions are better with motivation problems, simply because a private profit motive provides good protection against waste. However, it is also possible to design private profit incentives in hierarchies, as documented by the many management bonus programs in today’s large corporations. The crucial question with regard to asymmetric information is, therefore, who has the superior information. It is usually a good idea to allocate decision-making rights to the most well-informed part of the economic system.

Scientifically speaking, then, and despite recent debates and trends, we cannot conclude that *one* of these systems – hierarchical or market-based – is better than the other. It all depends on the context and on the weight that is assigned to the various objectives of the system. In fact, most mechanisms use a combination of pricing and directives, and both centralized and decentralized coordination.

### Market failures in the healthcare sector

In a world without market failures, markets could resolve all coordination and motivation problems and, in terms of the Arrow-Debreu neoclassical general equilibrium model, lead to first best outcomes (Arrow and Debreu 1954). However, in reality, markets are not failure-free. This is why non-market relations and institutions, such as vertical integration and government intervention, came about in order to mitigate for market failures.

Market failures occur when markets fail to achieve efficient allocation. They can be caused by market power, externalities, information asymmetry and public goods. In the healthcare sector, information asymmetry, market power and externalities are the most important sources of market failure.

In a world in which there was an omniscient and benevolent regulator, able to ensure complete implementation of its decisions, market failures would be corrected, and it would still be possible to achieve a first best outcome. Unfortunately, in practice, government interventions that were designed to resolve market failures have in turn given rise to new coordination and motivation problems (Milgrom and Roberts, 1992). These government failures arise because governments do not have perfect information about the markets in which they are intervening. This information asymmetry complicates the motivations of the parties involved.

As a sector, healthcare is plagued by market failures. It is for this reason that governments in all countries provide healthcare, either through state insurance (e.g. Denmark and the UK) or heavy intervention in and/or regulation of the healthcare system (e.g. in the US and the Netherlands).

Any reorganization of the healthcare system is a complicated task, and more government intervention can easily create more problems than it solves. It is therefore very important to reflect carefully on the multiple effects of changes in the healthcare sector. It is easy to solve one problem (e.g. excessive rents) only to create new problems (e.g. destroying incentives for efficiency and investment in innovation). Well-designed healthcare regulation needs to anticipate any such effects and take them into account.

In particular, this concerns special features of public industries such as intrinsic

motivation (e.g. for doctors), long-term investment and multiple regulations (e.g. on price and on quality). In economic theory, agents are assumed to be opportunistic and rational. In reality, however, people also have altruistic motivations and may be intrinsically motivated to carry out certain public tasks. Arrow (1963) notes that “when the market fails to achieve an optimal state, society will, to some extent at least, recognize the gap, and non-market institutions will arise attempting to bridge it”. I will discuss these ‘non-market institutions’ below. The way in which the healthcare system is structured and restructured can undermine intrinsic motivation and non-market institutions such as social capital and trust.

Similarly, the design of any healthcare system should take into account the long-term effects of certain incentives. Long-term effects include the effect on innovation and the structure of the sector (incentives may affect the number and the size of firms, entry into and exit from the sector, location, etc.). In addition to being regulated on price, healthcare providers are also regulated in other ways (e.g. quality regulations) and also have to live with changes in market conditions.

When Kenneth Arrow wrote his seminal article on healthcare (Arrow 1963), he was the first to reconcile economic theory with the healthcare sector. In his article, Arrow not only applied standard economic economics<sup>2</sup> but he also offered an explanation for what he called “non-market institutions”. His explanation for non-market institutions, such as not-for-profit healthcare providers and government interventions, was market failures like uncertainty and asymmetric information. He states that:

*“The failure of one or more of the competitive preconditions has as its most immediate and obvious consequence a reduction of welfare.... I propose here the view that, when the market fails to achieve an optimal state, society will, to some extent at least, recognize the gap, and nonmarket social institutions will arise attempting to bridge it.”*

So in order to understand both market and non-market institutions in the healthcare sector, and their impact on the structure of the market, we need to

---

<sup>2</sup> By which I mean competition and utility maximizing agents.

delve a little deeper into the detail of market failures. Market failures distort outcomes in a competitive market. In this address, I will focus on the main market failures that are relevant to national healthcare systems. I will start with market failures in health insurance markets – caused by the non-marketability of risk and asymmetric information. Then I will discuss two important market failures in healthcare provision: the so-called ‘shopping problem’, which arises because of asymmetric information and search costs, and the ‘differentiated good problem’, which is associated with market power in these markets.

### **Marketability of risk**

The most obvious reason for market failures in the healthcare sector (noted by Arrow in 1963) is that healthy persons do not know whether and when they may fall ill: in other words, their demand for healthcare is stochastic. Nevertheless, illness remains a serious risk for most people, with the potential to impact significantly on their life. Their health, jobs and lifestyle can all be put in jeopardy, and of course, there is always the risk of death. Because of the significant potential impact of illness, the benefits of treatment often exceed its price – even when that price is very high. This combination of uncertainty and the high costs associated with medical treatment means that there is a demand for health insurance. However, the health insurance market is vulnerable to market failures.

Adverse selection and moral hazard are both special cases of information asymmetry between buyers and sellers on a market. While adverse selection refers to effects of information asymmetry before a contract has been signed, moral hazard refers to effects of information asymmetry after a contract has been signed.

George Akerlof (1970) pioneered the idea of adverse selection in his seminal paper about the market for used cars, for which he was awarded a Nobel Prize. To summarize, if sellers know more about the quality of the cars they sell than buyers, the market may break down. If buyers know nothing about the quality of a used car, they are likely to be inclined only to buy cheap cars of low quality and refuse to buy a more expensive car, because they cannot tell whether it really is better quality. A nice classroom experiment designed by Holt and Sherman (1999), which I often use in teaching, illustrates this mechanism very neatly. In the health insurance market, adverse selection plays a big role. It explains

why young and healthy people may not avoid purchasing health insurance, and why health insurance companies may not want to sell insurances to elderly and unhealthy people.

Moral hazard occurs after the contract has been signed. Unless the contract specifies that the consequences of taking risks are borne by the policyholder, the policyholder may be inclined to take more risks than otherwise. An insurance policy is a contract that shifts the risk from the policyholder to an insurance company. If people are insured against the consequences of, let's say, theft, they may start making less effort when it comes to watching or safeguarding the items that they have insured. In terms of health insurance, an insured person may be inclined to neglect his or her health (by, for example, taking too little exercise), and rely on medication instead. Both adverse selection and moral hazard pose serious challenges in any healthcare system, and thus deserve more attention in this lecture.

### Adverse selection

Adverse selection is a significant market failure in the healthcare sector, particularly in health insurance. It explains why governments intervene in healthcare markets to the extent that they do. Arrow (1963) remarked that non-market institutions may arise to bridge the gap caused by market failures. In health insurance markets, governments intervene in the form of regulation.

The market for health insurance is severely undermined by adverse selection for two reasons. On the one hand, consumers may have more information about their health status than insurers. Since health insurance implies a redistribution of income from healthy people to ill people, healthy people who are unlikely to fall ill may have an incentive not to take out insurance if the premium exceeds what they consider to be reasonable (depending on their health status). However, if relatively healthy people do not take out health insurance, the burden of cost falls on another group of policyholders, pushing up insurance premiums. In turn, these persons may prefer to remain uninsured and so on, until the market collapses. This mechanism is known as adverse selection.

On the other hand, insurers may be able to predict healthcare costs for a given consumer based on their characteristics (their gender, age, source of income, etc.). Leaving health insurance provision to a free, unregulated market will



therefore lead to very expensive insurance for certain patient groups (e.g. the elderly), even to the point where it becomes unattainable. This mechanism is known as risk selection by insurers.

The first point to note is that healthcare costs are characterized “both by large random variation as well as large predictable variation across individuals” (Ellis and Van de Ven, 2000). For example, Figure 2 shows the distribution of healthcare cost across the population of the Netherlands.

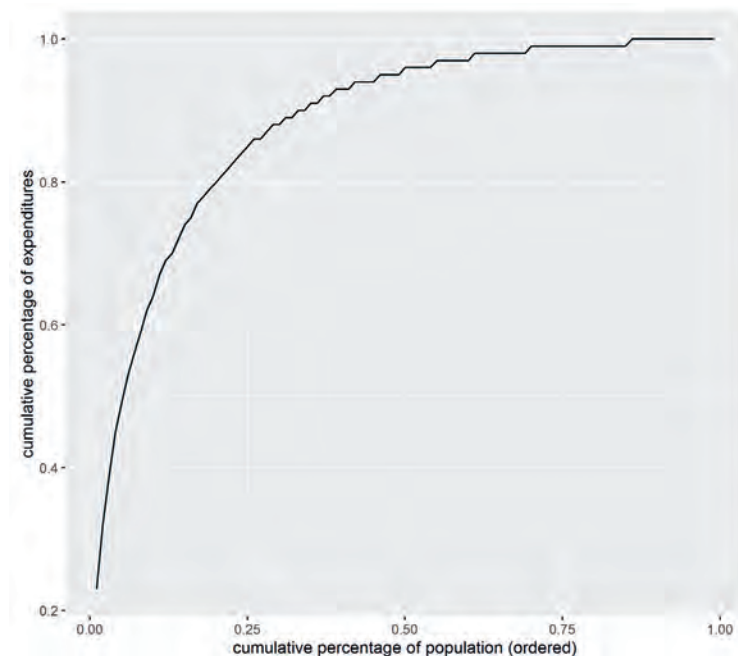


Figure 2: The distribution of healthcare costs<sup>3</sup>

The distribution the cost of healthcare is very unevenly distributed. Figure 2 shows that the ‘most expensive’ 1% of the population is responsible for 23% of the spending on curative healthcare, while some 49% of the healthcare costs are directed at the top 5% of healthcare consumers.

---

<sup>3</sup> Source: Risk adjustment data 2013, NZa

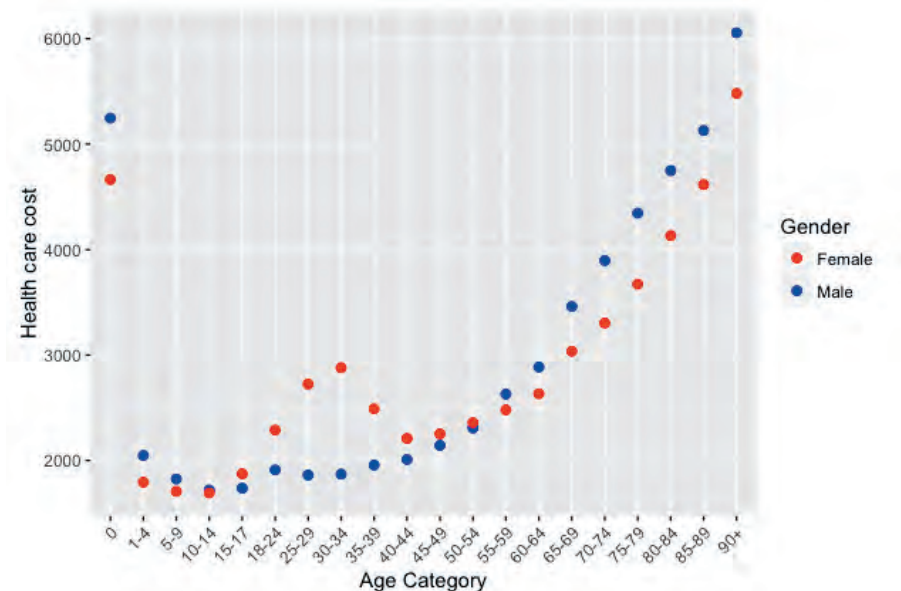


Figure 3: Healthcare spending per age-category in the Netherlands<sup>4</sup>, estimated amounts 2016

Healthcare costs are also – to some extent – predictable. Figure 3 shows that healthcare costs depend on gender and age.

If insurance companies offered just one type of insurance, without premium differentiation, young and unhealthy people may not want to take out health insurance, because the premiums would be much higher than the expected cost. However, if health insurers offered different policies for different types of clients (e.g. cheaper insurance for young males and expensive insurance for the elderly or for women aged between 20 and 40), the premiums might be too expensive for these specific groups.

Left to its own devices, the health insurance market would break down due to adverse selection, so most governments intervene in these markets. The state may offer health insurance itself, as is the case in countries like the UK, Sweden and France, or it may strictly regulate private (or public) insurance companies as happens in Germany, Switzerland and the Netherlands). The

<sup>4</sup> Source: <https://www.zorginstituutnederland.nl/binaries/content/documents/zinl-www/verzekering/risicoverevening-zvw/zvw-2016/zvw-2016/zinl%3Adocuments%5B4%5D/1511-regeling-risicoverevening-2016/Regeling+risicoverevening+2016.pdf>

US has traditionally used a mixed approach. A free market, including adverse selection, for a part of the population, but with state insurance for vulnerable groups (e.g. Medicare for the elderly, Medicaid and SCHIP for low income children and their families, (IHS) for native Americans and VA and TRICARE for veterans and active duty service members). To increase risk-solidarity in health insurance, countries with private insurance markets, in particular the Netherlands, have enacted mandatory health insurance with restrictions on premium differentiation, in which risk-adjustment compensates insurers for differences between their policyholders. I will elaborate on this point later, when we come to discuss the Dutch healthcare system in more detail.

### Moral hazard

Moral hazard is the second form of market failure that impacts on behavior after the health insurance contract has been signed. Since insurers<sup>5</sup> cover all or most of the cost of treatment, consumers will tend to consume too much<sup>6</sup>. The most convincing study into the existence and impact of moral hazard was the ‘Rand experiment’ (see Dranove (2003) for a good description of the Rand experiment), conducted in the 1970s<sup>7</sup>. In this experiment, consumers were randomly assigned to healthcare insurances with different levels of co-payments and deductibles. For some consumers, co-payments and deductibles were zero. These consumers had all their costs reimbursed. Another group of consumers had to pay up to 25% of their healthcare expenditure. Others had to pay very large deductibles, which meant they were only insured against ‘catastrophic’ risks. Even three decades after the main findings of the study were presented, the conclusions are still considered to be robust: co-payments and deductibles help to reduce moral hazard (Aron-Dine et al. 2013). A potential negative effect is that enrollees who have signed up to pay deductibles may reduce their healthcare consumption or delay receiving the healthcare that they need. The RAND Health Insurance Experiment found that higher cost-sharing led to reductions in the consumption of both essential and non-essential medical care.

---

<sup>5</sup> Including ‘state insurance’.

<sup>6</sup> An economist might say that the consumer consumes more than the efficient level because he does not pay the marginal cost of the last unit of healthcare given to him.

<sup>7</sup> See Aron-Dine et al. (2013) for a discussion about the Rand experiment.

The reduction of health care consumption did not affect the health status of the majority of the population. However, the health status of the enrollees with a low income and poor health was negatively affected (Newhouse, 2004).

Despite this, in most countries with state insurance or mandatory private insurance, co-payments and deductibles are either absent or very low because increasing co-payments and deductibles are very unpopular with the general public, which has generally led governments to avoid them. Furthermore, increasing copayments is at odds with the rationale of health insurance, which is namely to protect consumers from high and unexpected healthcare costs (Dranove 2003).

### **The ‘shopping problem’.**

Consumers are not only uncertain about when and whether they will fall ill. When they do fall ill, they normally do not know which type(s) of healthcare they need, how much of it, and where to obtain it. Furthermore, many illnesses require treatment by doctors with different specialties. Since most patients know very little about which healthcare they need, they are not in a position to coordinate the activities of the various doctors involved. Finally, it is very hard for patients to evaluate the effectiveness of the treatment *ex post*, because some ‘good’ treatments may prove ineffective, while other patients may recover after ineffective treatment. This set of issues is known as the ‘shopping problem’.

For these reasons, consumers do not usually make their own healthcare decisions, but do this through secondary markets or intermediaries. Insurers shift the costly risks of uncertain demand away from consumers. Primary care physicians help consumers to identify and find the healthcare that they need (see Gaynor et al. 2012 for the positive effects of the help of primary care physician on the quality of care in the UK). Hospitals coordinate complex healthcare services that are tailored to the patient’s needs and monitor treatment outcomes. The providers of healthcare (physicians) not only provide treatment, but also diagnosis as well as advice on which treatment is needed. This gives rise to agency problems, since the doctor may diagnose wrongly and/or direct the patient to receive too much or too little treatment.

The phenomenon of doctors prescribing treatment that is too expensive (because more expensive treatment is more profitable for doctors) is known as ‘supplier-induced demand’.

Regulations that aim to mitigate the shopping problem include setting standards and rules on transparency.

### **Differentiated products and market power**

Healthcare is a differentiated product. This means that sellers of healthcare have market power. The preferences of patients are also heterogeneous. Location is a particular source of differentiation in healthcare markets. Since patients are spatially dispersed and will naturally prefer to receive treatment nearby, healthcare markets tend to be local. The distance between the patient and the hospital accounts for 74% of the statistical variance in the hospital choices made by patients in the Netherlands (see Halbersma et al. 2009).

Hospital markets in countries like the US, UK and the Netherlands are highly concentrated (Gaynor and Town 2012). In theory, concentration may lead to economies of scale and scope and therefore have a positive effect on the delivered quality and prices. Market power, on the other hand, may lead to higher prices and lower quality. Most empirical studies show that concentration leads to higher prices (see Gaynor and Town 2012), while the effect of concentration on quality is less clear. When prices are regulated (as in the UK and Medicare in the US, for example), most studies find that competition has a positive impact on quality. With liberalized prices, the effect varies between studies: some papers show that competition has a positive effect on quality, while other show the opposite.<sup>8</sup> The problems of market power in healthcare provision have been addressed by regulation, which I will discuss next.

### **Sector-specific regulations and competition policy**

Because of the market failures described in the previous sections, healthcare markets are characterized by a significant level of government intervention. Government intervention can vary from the supply of healthcare by state-run hospitals and ‘employee-physicians’ – as in the UK and Denmark and state-provided insurance in the US<sup>9</sup> – to extensive regulation of insurance markets (mandates, coverage, community-based premiums) and healthcare provision (market entry, price regulation and (tax)benefits for non-for-profit providers).

---

<sup>8</sup> See Gaynor and Town (2012) for an overview.

<sup>9</sup> Medicare, Medicaid and provision of healthcare to veterans

Most OECD countries regulate entry into the market for healthcare providers. They regulate the entry of medical staff (such as nurses and doctors), the entry of hospitals and the diffusion of new technology. There are two main reasons for this kind of regulation. The first is the healthcare policy objective of curbing the growth in healthcare spending and the idea that oversupply may lead to supplier-induced demand for healthcare. The second reason is to mitigate the ‘shopping problem’ outlined above. The main idea of supplier-induced demand

is that an increase in both the supply and the number of suppliers of healthcare will lead to an increase in demand for healthcare. Although the existence of this phenomenon is broadly accepted, its prevalence is not well understood. Research into supplier-induced demand generally finds a (positive) correlation between the number of healthcare suppliers and the number of physicians in a certain area. However, the causality of this relationship is unclear, as illustrated by the following citation from Auster and Oaxaca 1981<sup>10</sup>:

“There was once a cholera epidemic in Russia. The government, in an effort to stem the disease, sent doctors to the worst-affected areas. The peasants in the province of S discussed the situation and observed a very high correlation between the number of doctors in a given area and the incidence of cholera in that area. Relying on this hard fact, they rose and murdered their doctors”.

In most OECD countries, hospital prices are regulated in various ways. Prices are either regulated centrally or locally. For example, since 2006 the UK Department has set nationwide HRG prices<sup>11</sup>. In other countries, such as Denmark, local government is responsible for the contracting and budgeting of hospitals. In countries where insurers act as third party payers, hospital prices are still regulated, with the notable exception of the US and some hospital production in the Netherlands.

With respect to the quality objective, many countries have inspectorates to safeguard (minimum) quality and patient safety. Countries like the UK and the Netherlands also try to improve transparency in relation to the standard of quality provided.

---

<sup>10</sup> I owe this quote to Pomp (2010)

<sup>11</sup> HRG is the British equivalent of DRGs.

Salkever (2000) writes about the regulation of prices and investment in hospitals in the US. Due to significant growth in healthcare spending, many states in the US have started to regulate prices and hospital investment. The most important regulations were the implementation of rate setting (e.g. for Medicare, see Shleifer 1985 for a description of the Medicare Prospective Payment System), and so-called Certificates of Need for new entrants, investment and the provision of new services by existing providers. Empirical research by Salkever 2000 shows that the effect of such regulation remains unclear.

### Competition policy

In the past, competition law was not applicable to the healthcare sector for several reasons. However, in response to an increase in competition in the healthcare sector, more and more competition authorities around the world do now apply competition law to the healthcare sector. In the US, for instance, competition law has been applied since 1976 (DOJ and FTC (2004) and Gaynor (2000)). In Europe, many hospitals are state-owned, meaning that they are not always classified as “undertakings” and are therefore not subject to competition law. In Germany and the Netherlands, hospitals (and insurers) are privately owned<sup>12</sup>, so competition law applies to the healthcare sector in these countries. But even where healthcare institutions are not state-owned, the courts may decide that certain institutions cannot be treated as undertakings, and that competition law does not apply to these firms. An example of the latter is a decision by the Brussels Court of Appeal that a Belgian health insurance fund did not qualify as an undertaking.<sup>13</sup>

It is widely recognized that the introduction of patient choice means competition between hospitals, however. So even in countries where competition law does not apply to healthcare institutions, there are concerns about the level of competition in the healthcare sector. In the UK, for example, the government has established a sector-specific organization named the Co-operation and Competition Panel (CCP) to handle matters relating to competition between NHS hospitals. The CCP assumes that competition between hospitals promotes the delivery of higher-quality care for patients and better value for money for taxpayers. The body investigates cases where hospitals engage in anticompeti-

<sup>12</sup> Although often by foundations and trusts and often not-for-profit}

<sup>13</sup> See the case of *Kristel Cools BVBA versus Christelijke Mutualiteit Antwerpen* published on [http://www.concurrences.com/IMG/pdf/2009\\_10\\_02\\_Belgium01Doc\\_KUL-81-2.pdf](http://www.concurrences.com/IMG/pdf/2009_10_02_Belgium01Doc_KUL-81-2.pdf)

tive practices and makes independent recommendations to the Department of Health and Monitor regarding how such cases should be resolved. It also reviews proposed mergers, and advises on the wider development of co-operation, patient choice and competition within the NHS.<sup>14</sup>

The assessment of mergers by competition authorities is based on the assumption that a higher market share may lead to higher prices. This assumption is based on the economics paradigm of Structure Conduct Performance. All the steps in assessing a merger therefore boil down to the definition of the relevant market. If the market is defined too narrowly, firms active in that market will inevitably have a higher share of that market and mergers will be blocked even if there is no evidence of mitigating factors (step 5). On the other hand, if markets are defined too broadly, firms will inevitably have a smaller market share and mergers are more likely to be approved. The assumption that a higher market share will lead to higher prices stems from a Cournot model of competition (see Motta (2004) for a description of the different models of competition) between producers of homogenous goods. As described previously, the assumption that healthcare providers generally (and hospitals in particular) provide homogenous goods is not particularly realistic. The problem with the delineation of relevant markets in the case of differentiated products is that it considers a certain product as either a “full” substitute or as no substitute at all. In practice, however, many products and certainly hospitals are imperfect substitutes for any given patient. Whether a certain hospital is a good substitute for another hospital will depend on both the characteristics of the patient in question (such as their medical condition, age, gender and location) and the characteristics of the hospital (such as location, perceived quality, treatments offered, status etc.). If we take travel distance from the patient’s home to the hospital as an example, some hospitals are more attractive than others just because they are located nearer to the patient than others. The binary decision on whether or not to include a particular hospital does not reflect a much more complex reality, in which hospitals may be able to substitute each other to a certain extent, in certain cases.

### **Different systems of healthcare delivery**

Different countries have designed different healthcare systems to mitigate the effects of the market failures that we have examined. They have developed

---

<sup>14</sup> see <http://www.ccpanel.org.uk/> for more information.



different solutions for the following reasons:

- circumstances are different;
- the development of healthcare systems is path dependent;
- every solution has a drawback.

Firstly, circumstances are different in every country. For example, price competition between healthcare providers may be possible in densely populated countries such as the Netherlands, but price competition in countries like Sweden and Norway, both large, sparsely inhabited countries, is much more difficult. In these countries, the majority of hospitals may be regional monopolies.

Secondly, countries have different histories. The decisions and organizational structures of the past may exclude or reinforce certain decisions today. Systems are generally not subject radically reforms, but are gradually improved. For example, while in the UK and the Scandinavian countries, the healthcare system has always been funded through general taxation, Germany and the Netherlands have always had private (not-for-profit) social insurers. The existence of the latter has made it a more natural step for the Netherlands to implement a system of managed competition.

Thirdly, any healthcare solution has its drawbacks. Due to market failures in the healthcare sector, there is no panacea. Any organization will have to compromise on some of the objectives, and institutional design will depend on preferences, policy goals and current and past circumstances.

However, despite the major differences between countries, in all countries there is government intervention in the healthcare system. In some cases the government acts as an insurer. For example, the government insures all citizens in countries like the UK and Denmark. In other countries, like the US, the government acts as an insurer for specific vulnerable groups such as the elderly (Medicare), the poor (Medicaid) and veterans (Veterans Affairs).

Different countries choose different systems, ranging from a complete hierarchical system in which the government takes care of both the insurance and the provision of healthcare. Examples of such countries are the UK and Denmark.

In these healthcare systems both insurance and the provision of healthcare are

provided by the state and state-owned organizations. Medical staff are generally public sector employees.

The solution to the problem of adverse selection and guaranteeing universal access to healthcare (insurance) has been organized by the state. This leads the state to contain budgets by rationing access to healthcare (e.g. by the late introduction of new medical technology and/or the acceptance of waiting lists), because the state is responsible for both healthcare budgets and healthcare access. However, a state-owned organization can lead to weaker incentives to improve efficiency and quality. A good regulatory regime or good public contracting that incorporates prospective payment plans, for example (Shleifer 1985), benchmarking and yardstick competition (Agrell et al. 2007) may enhance efficiency. These systems are generally considered to be supplier-driven rather than consumer-driven (Docteur 2003).

In other countries, systems have developed whereby both health insurance and the provision of healthcare are private matters. The US is one example. To cope with the adverse selection problem, described above, the government incentivizes healthcare insurance through tax deductibles for employers and “state” insurance schemes for vulnerable groups. The US department of Veterans Affairs even provides care through state-run hospitals. In fact, the Veterans Affairs system is the largest integrated healthcare system of the US consisting of 168 medical centers<sup>15</sup>, in addition to numerous community-based outpatient clinics<sup>16</sup>.

So at one end of the spectrum we have a hierarchical, state-run system and, at the other, a system of no mandatory health insurance and the government insures vulnerable groups. The healthcare system of the Netherlands is a compromise between these two.

The Netherlands introduced managed competition in 2006. The Dutch model is based on mandatory health insurance for all Dutch citizens, whereby private health insurers offer a standard package of healthcare benefits and compete to attract consumers. It is comparable to the system in Switzerland. Below I will describe the Dutch system in more detail.

---

<sup>15</sup> Source: <http://www.va.gov/health/FindCare.asp>

<sup>16</sup> See [http://www2.va.gov/directory/guide/map\\_flash.asp?isflash=](http://www2.va.gov/directory/guide/map_flash.asp?isflash=) for an overview of the Veterans Affairs facilities

Finally, one country's healthcare system is worth a particular mention – Singapore. In Singapore, citizens are legally obliged to save money for medical expenses. The government provides an insurance scheme for “catastrophic” illnesses and expensive treatments (see Lim 2004).



# The Dutch system

### Three pillars of the Dutch healthcare system.

The Dutch healthcare system consists of three “pillars”. The first pillar is tax-funded “government insurance” for long-term care.<sup>17</sup> The second pillar is mandatory health insurance for all Dutch citizens. The coverage of this mandatory insurance is determined by the government and includes GP care, hospital care, drugs, natal care, curative mental care, ambulance and patient-transport services and some paramedical care (e.g. physiotherapy for chronic diseases, speech therapy and occupational therapy).

|   |
|---|
| Third compartment<br>Complementary insurance<br>Expenses 2015: 4.4 billion Euro |
| Second compartment<br>Mandatory insurance<br>Expenses 2016: 45.9 billion Euro   |
| First compartment<br>Long term care<br>Expenses 2016: 21.2 billion Euro         |

Figure 4: An overview of the three pillars in the Dutch healthcare system

Source: Budget of the Dutch Ministry of Health 2016<sup>18</sup> Source for the complementary insurance: CBS<sup>19</sup>

The third pillar is voluntary complementary insurance, which can cover anything (from spectacles to paramedical care that is not covered by the mandatory insurance and alternative medicine). A large percentage of the population purchases this supplementary insurance, although the percentage declined from 89% of the population in 2011 to 84.1% in 2015.<sup>20</sup>

<sup>17</sup> In 2015 the responsibility for residential care and youth care was transferred from the state to the local municipalities, see Maarse and Jeurissen 2016 for a complete overview of the 2015 reforms in the long term care sector in the Netherlands.

<sup>18</sup> <https://www.rijksoverheid.nl/onderwerpen/prinsjesdag/documenten/begrotingen/2015/09/15/xvi-volksgezondheid-welzijn-en-sport-rijksbegroting-2016>

<sup>19</sup> <https://www.cbs.nl/nl-nl/nieuws/2016/20/zorguitgaven-stijgen-langzamer>

<sup>20</sup> Source: NZa marktscan 2016. [https://www.nza.nl/publicaties/1048188/Marktscan\\_Zorgverzekeringmarkt\\_2015\\_update\\_mei\\_2016](https://www.nza.nl/publicaties/1048188/Marktscan_Zorgverzekeringmarkt_2015_update_mei_2016)

In this inaugural address, we will focus on the mandatory insurance package (the second pillar). This system was introduced in 2006 by the Health Insurance Act (ZVW) and the Dutch Healthcare Market Regulation Act (WMG).

### Introduction of competition

The principal behind the Dutch system that was introduced in 2006 is that insurers compete for consumers and that healthcare providers compete for contracts with health insurers.

The main characteristic of the Dutch model of managed competition is that consumers can exercise freedom of choice about which insurer they use. Consumers may switch to a rival insurer to seek a better price for their insurance, better service, or better value in the underlying provider network. The aim of this model is to align the commercial interests of insurers with consumers' health and financial wellbeing, whereby insurers can prosper by purchasing healthcare for consumers in the most prudent way (See Mikkers and Ryan 2014).

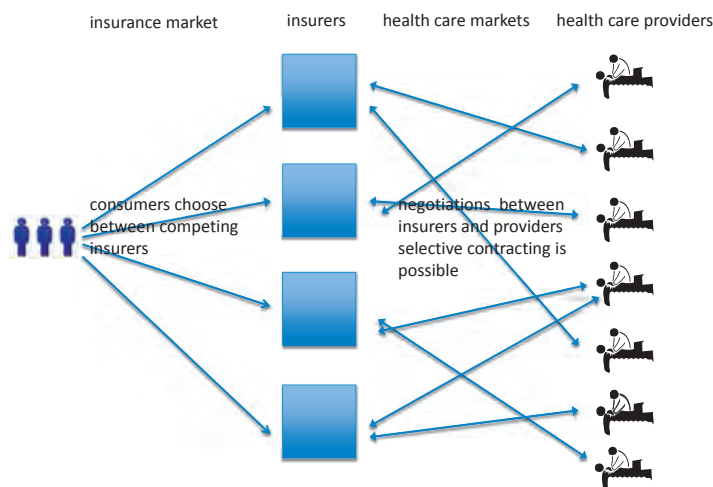


Figure 5: the idea behind competition in healthcare markets<sup>21</sup>

<sup>21</sup> Source of the figure is Mikkers and Ryan (2014).

Based on Capps et al. (2003), we could describe health insurance as an option on a bundle of access rights for healthcare providers. Because consumers choose the insurance with the best network for them, given their specific characteristics, health insurers are incentivized to contract the best healthcare providers.

Healthcare insurers are not obliged to contract all healthcare providers: selective contracting is permitted. Selective contracting means that insurers may exclude inefficient or poor-quality providers from contracts and negotiate all dimensions in the contract (e.g. price, quality and volume).

Prices in the Dutch hospital sector were liberalized gradually from 10% of hospital production in 2006 to over 30% in 2009. In 2012, the liberalized part was extended to all elective care (roughly 70% of hospital production). In some other sectors such as physiotherapy and pharmacy, prices have also been liberalized (See Mikkers and Ryan 2014).

### **Regulation in the insurance market**

Every Dutch citizen is required by law to take out health insurance covering a standard package of benefits that is determined by the government. Although selective contracting is allowed, insurers are required to contract enough healthcare to meet the demand of their enrollees (“zorgplicht”). This means that waiting lists are not acceptable in the Dutch healthcare system. Insurers are also obliged to provide services to all consumers, regardless of their health status: acceptance is mandatory and there can be no premium differentiation. To keep the healthcare system accessible for those on lower incomes, to prevent risk selection and to provide a level playing field for insurers, the government has designed an ingenious financing and compensation scheme.

### **Financing the healthcare system and risk solidarity**

To ensure that the Dutch healthcare system remains accessible for those on lower incomes, roughly half<sup>22</sup> of the estimated expenses under the Health Insurance Act are collected by the government on the basis of an income dependent premium. The other half of the estimated costs is funded through a nominal premium charged by the insurers to their enrollees.

---

<sup>22</sup> See article 45-5 ZvW (Health Insurance Act).



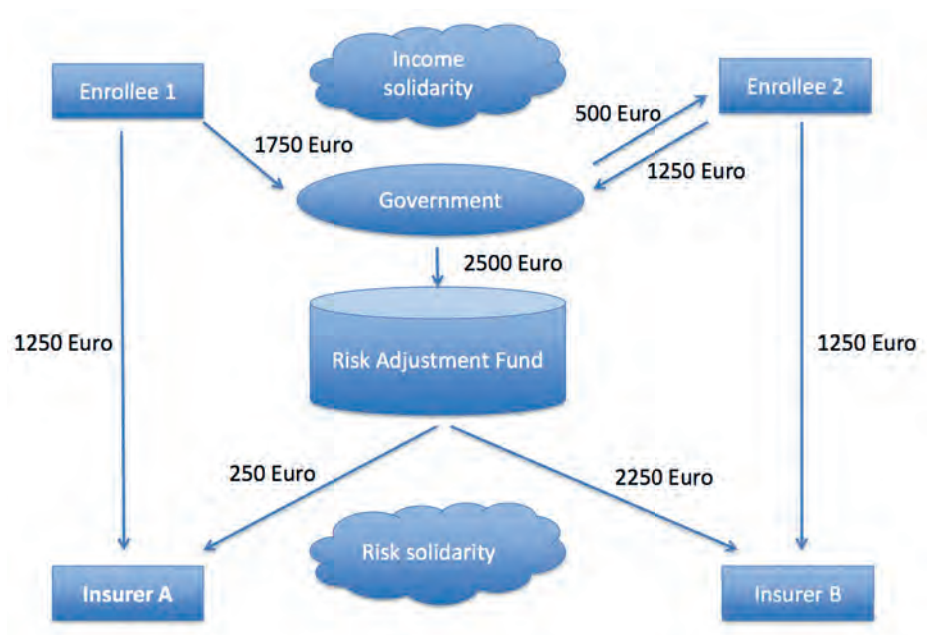


Figure 6: Overview of funding streams in the Netherlands

This system of financing creates income solidarity (the transfer of income from richer citizens to poorer citizens) through the income-dependent funding stream. By redistributing the tax-funded stream to insurers on the basis of on the risk profile of their policyholders, the financing scheme aims to create risk solidarity too.

The average nominal premium paid in 2015 was € 1,158 per year.<sup>23</sup> The income dependent premium in 2016 is set at 6.75% of a maximum annual taxable income of € 52,763<sup>24</sup>. Households with an annual income of less than € 33,675<sup>25</sup> are eligible for a tax allowance. In 2015, 4.5 million households received a tax

<sup>23</sup> Source: NZa marktscan 2016. [https://www.nza.nl/publicaties/1048188/Marktscan\\_Zorgverzekeringsmarkt\\_2015\\_update\\_mei\\_2016](https://www.nza.nl/publicaties/1048188/Marktscan_Zorgverzekeringsmarkt_2015_update_mei_2016)

<sup>24</sup> Source: [http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/privewerk\\_en\\_inkomen/zorgverzekeringswet/veranderingen\\_bijdrage\\_zvw\\_2016/veranderingen\\_inkomensafhankelijke\\_bijdrage\\_zvw\\_2016](http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/privewerk_en_inkomen/zorgverzekeringswet/veranderingen_bijdrage_zvw_2016/veranderingen_inkomensafhankelijke_bijdrage_zvw_2016)

<sup>25</sup> With only one person working per household, the maximum income is €27,012 per year. Source: [http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/privetoeslagen/zorgtoeslag/zorgtoeslag\\_2016/voorwaarden\\_2016/inkomen/de\\_hoogte\\_van\\_mijn\\_inkomen](http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/privetoeslagen/zorgtoeslag/zorgtoeslag_2016/voorwaarden_2016/inkomen/de_hoogte_van_mijn_inkomen)

allowance of, on average, € 828 annually.<sup>26</sup>

### **Risk adjustment**

The nominal premium insurers that charge to their enrollees may differ between policies, but must be the same for all consumers.<sup>27</sup> In other words, premium differentiation is not allowed.

Under a system such as the Dutch system, with mandatory acceptance and a ban on premium differentiation, insurers are incentivized to engage in risk selection because they stand to gain from policyholders who have lower healthcare costs. The incentive therefore exists for them to actively seek out attractive consumers and discourage potentially loss-making consumers by targeting specific consumers using specific marketing or by providing better or worse services for specific consumers. Another option is to let consumers self-select by offering specific contracts to specific groups. Insurers could, for example, offer a contract with a very limited network of providers and a low premium, with high co-payments if patients go outside the specified network. Such a contract would only be attractive to healthy consumers.

If a particular health plan does not adjust its premium for a risk factor that is known either to the individual policyholder or to the plan, low-risk individuals will tend to choose a competing plan that offers a lower premium or a contract that is specifically designed to attract low-risk individuals. Consequently, the first plan, which is left with only high-risk individuals, will be forced to increase its premium. In this way, in the absence of any restrictions on premiums, a competitive health plan market will tend to result in risk-adjusted premiums that differentiate according to the individual consumer's risk. This is known as the equivalence principle.

The absence of risk adjustment may also lead to under an undersupply of good healthcare, thus jeopardizing the policy objective of quality. Beaulieu et al. (2006) provide an example of what happens when there is no or insufficient risk adjustment. The paper studies a specific Diabetes Disease Management

---

<sup>26</sup> Source: Budget Ministry of Health 2016 <https://www.rijksoverheid.nl/onderwerpen/prinsjesdag/documenten/begrotingen/2015/09/15/xvi-volksgezondheid-welzijn-en-sport-rijksbegroting-2016>

<sup>27</sup> With one notable exception: insurers are allowed to give rebates on collective contracts.

program (DDM) by HealthPartners<sup>28</sup>, which was designed to improve the health status of diabetes patients and mitigate the effects of diabetes. Apart from the improvement in health status, the healthcare cost per diabetes patients per year were also substantially reduced (\$1,900 per diabetic patient), which is equal to approximately 15% of actual medical care costs for diabetic members. Because of the improved healthcare for diabetes patients, HealthPartners attracted more new diabetes patients. Since diabetes patients incur higher healthcare costs than average policyholders, the cost savings of the DDM actually led to an overall loss for HealthPartners. Beaulieu et al. (2006) estimate the cost of extra diabetes patients to be \$2,338 per diabetic enrollee per year, which means that “adverse selection costs could far exceed the benefits of high quality diabetes care and present a serious deterrent to health plans adopting these programs when premiums paid to the plan are not risk adjusted.”

Risk adjustment is a necessary pre-condition in a system of managed competition and mandatory insurance in order to prevent risk selection and to incentivize insurers to contract care that maximizes public health policy objectives.

The risk adjustment system began in a very basic form in 1993, with age and gender. Since that time, the model has gradually evolved and improved. See Van Kleef et al. (2013) for an overview. And although the risk adjustment scheme is considered good, there remain sub-groups which are under- and over compensated.

As an example, the figure below shows the amount that an insurer currently receives (2016) from the risk adjustment fund for a healthy 39-year-old male.<sup>29</sup> There are several types of cost that the model takes into account: variable healthcare costs (including hospital costs), the cost of care and nursing, curative mental healthcare and intramural mental healthcare. For each type of cost, the model uses the characteristics discussed below.

---

<sup>28</sup> HealthPartners, a vertically integrated health system (health insurance and healthcare provision) based in Minneapolis, Minnesota USA.

<sup>29</sup> Data from <https://www.zorginstituutnederland.nl/binaries/content/documents/zinl-www/verzekering/risicoverevening-zvw/zvw-2016/zvw-2016/zinl%3Adocuments%5B4%5D/1511-regeling-risicoverevening-2016/Regeling+risicoverevening+2016.pdf>

The model begins with gender and age. For a 39-year-old male, an insurer receives a total of € 1,996.39 per year. Because this male has not previously been ill (no former diagnosis (DKG) and no former pharmaceutical drug use (FKG)), the amount that the insurer receives for this person is reduced by, respectively, € 288.19 annually and € 352 annually.

| Indicator                | Value     | Variable health care cost | Cost of care and nursing | Curative mental healthcare | Intramural mental healthcare | Total    |
|--------------------------|-----------|---------------------------|--------------------------|----------------------------|------------------------------|----------|
| <i>Gender/Age</i>        | Man 39    | 1,474.21                  | 160.95                   | 304.58                     | 17.65                        | 1,996.39 |
| <i>FKG</i> <sup>29</sup> | None      | -243.41                   | -13.06                   | -31.72                     |                              | -288.19  |
| <i>DKG</i> <sup>30</sup> | None      | -269.63                   | -9.85                    | -71.89                     | -1.01                        | -352.38  |
| <i>HKG</i> <sup>31</sup> | None      | -15.72                    | -3.84                    |                            |                              | -19.56   |
| <i>AVI</i> <sup>32</sup> | Reference | -43.91                    | 8.60                     | -33.07                     |                              | -68.38   |
| <i>Zip code</i>          | 1462      | -49.86                    | 2.45                     | -8.96                      |                              | -56.37   |
| <i>SES</i> <sup>33</sup> | High      | -169.71                   | -51.27                   | -18.46                     | -3.44                        | -242.88  |
| <i>MHK</i> <sup>34</sup> | None      | -251.36                   | -13.63                   |                            |                              | -264.99  |
| <i>VGG</i> <sup>35</sup> | None      | -29.29                    | -137.99                  |                            |                              | -167.28  |
| <i>FGG</i> <sup>36</sup> | None      | -10.91                    | 1.34                     |                            |                              | -9.57    |
| <i>GGG</i> <sup>37</sup> | None      | 1.21                      | -2.59                    |                            |                              | -1.38    |
| <i>Co-Morbidity</i>      | None      | -54.59                    | 8.44                     |                            |                              | -46.15   |
| <i>Epa</i> <sup>38</sup> | No        |                           |                          | -14.44                     |                              | -14.44   |
| <i>IGG</i> <sup>39</sup> | None      |                           |                          |                            | -11.71                       | -11.71   |
| <i>Total</i>             |           |                           |                          |                            |                              | 453.11   |

Table 1: An example of a risk adjustment payment for a healthy 39-year-old male

<sup>30</sup> FKG: Farmaceutical Cost Group

<sup>31</sup> DKG: Dianogstic Cost Group

<sup>32</sup> HKG: Medical Aid Devices Group

<sup>33</sup> AVI: Source of Income

<sup>34</sup> SES: Source of Income

<sup>35</sup> MHK: Multiple Year High Cost Group

<sup>36</sup> VGG: Former use of care and nursing

<sup>37</sup> FGG: Former use of fysiotherapy

<sup>38</sup> GGG: Former use of mental healthcare

<sup>39</sup> Epa: One person house hold

<sup>40</sup> IGG: Former use of intramural mental healthcare

The figure below shows the financial impact of some changes in the policyholder's characteristics. If the 39-year-old in question is a woman – holding all the other indicators fixed – the insurer receives € 494.85 per year more. If the male in question is a diagnosed hemophiliac, the insurer would receive an extra € 48,383.28 per year. The use of Intramural Mental Healthcare would increase the amount received by the insurer by € 75,259.21 per year.

| Indicator                | Value                   | Delta       |
|--------------------------|-------------------------|-------------|
| <i>Gender/Age</i>        | Woman 39                | + 494.85    |
| <i>FKG</i> <sup>40</sup> | Parkinson               | + 2,571.58  |
| <i>DKG</i> <sup>41</sup> | Hemophilia              | + 48,383.28 |
| <i>HKG</i> <sup>42</sup> | Trancheo stoma          | + 10,475.26 |
| <i>AVI</i> <sup>43</sup> | Social security benefit | + 605.77    |
| <i>Postcode</i>          | 1443                    | + 112.63    |
| <i>SES</i> <sup>44</sup> | Very Low                | + 306.56    |
| <i>MHK</i> <sup>45</sup> | Top-group               | + 37,763.69 |
| <i>VGG</i> <sup>46</sup> | Top 0.25%               | + 26,710.72 |
| <i>FGG</i> <sup>47</sup> | Top 2%                  | + 479.68    |
| <i>GGG</i> <sup>48</sup> | Top 0.275%              | + 584.57    |
| <i>Co-Morbidity</i>      | Yes                     | + 251.77    |
| <i>Epa</i> <sup>49</sup> | Yes                     | + 82.40     |
| <i>IGG</i> <sup>50</sup> | Use of IGG              | + 75,259.21 |

Table 2: The impact of changes in the characteristics of the policyholder.

<sup>41</sup> FKG: Farmaceutical Cost Group

<sup>42</sup> DKG: Dianogstic Cost Group

<sup>43</sup> HKG: Medical Aid Devices Group

<sup>44</sup> AVI: Source of Income

<sup>45</sup> SES: Source of Income

<sup>46</sup> MHK: Multiple Year High Cost Group

<sup>47</sup> VGG: Former use of care and nursing

<sup>48</sup> FGG: Former use of fysiotherapy

<sup>49</sup> GGG: Former use of mental healthcare

<sup>50</sup> Epa: One person house hold

<sup>51</sup> IGG: Former use of intramural mental healthcare

## The competitiveness of Dutch insurance and hospital markets

As mentioned above, the Dutch system is designed with the idea that competition between insurers for enrollees and competition between providers for contracts will help to achieve policy objectives. In this section, I would like to discuss whether the insurance markets and hospital markets are, in reality, competitive enough.

Insurance markets and some provider markets (especially GPs, mental healthcare, some parts of long-term care and hospitals) are concentrated. In this section, I will focus on the insurance market and the hospital market. The idea of competitive markets is that patients and enrollees have a choice and that parties that negotiate have alternative parties to contract with. Market power (both as a buyer and as a seller) may lead to higher prices, lower quality and lower accessibility. However, concentration can also lead to economies of scale: insurers and providers may be able to operate more efficiently or improve quality by scaling up.

### Insurance Market

Health insurance can be regarded as an option on a bundle of access rights relating to healthcare. The value of this bundle for a particular consumer depends on how much that consumer values the underlying network to which the insurance gives access. Since travel distance accounts for much of the variation when consumers are choosing a healthcare provider (see Halbersma et al. 2009 for the case of hospitals), I would argue that consumers would value networks that include providers close to their homes. I would therefore like to show the concentration of the insurance market at a local level. Another reason for presenting concentration at a local level is that negotiations with healthcare providers (such as hospitals, general practitioners, physiotherapists, dentists etc.) also take place at this local level.

While figure 7 below shows that local healthcare markets are concentrated<sup>52</sup>, even the market at a national level could be seen as concentrated (see NZa 2016).<sup>53</sup>

---

<sup>52</sup> HHI stands for Herfindahl-Hirschman Index of concentration. The HHI is calculated by squaring the market shares of firms active in a market. In the case of figure 7, the HHI consists of the summed market squares of insurers per municipality.

<sup>53</sup> The HHI on a national level is 2.224 (NZa 2016). A market with a HHI larger than 1800 may be considered have a 'high concentration' (see Motta 2004).

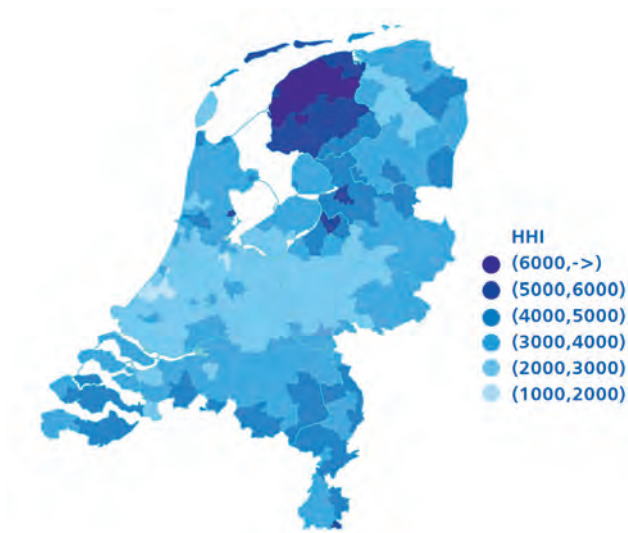


Figure 7: concentration in the Dutch health insurance market.

Source NZa (2016).

The Dutch health insurance market consists of four large firms which, together, serve together nearly 90% of the Dutch population (see NZa 2016) and 5 other smaller firms.

Since we do not currently have an established method for measuring the market power of health insurers directly, we will look at some trends on the health insurance market.

Price dispersion has increased since 2006, which means that consumers have more to gain if they switch from insurer.



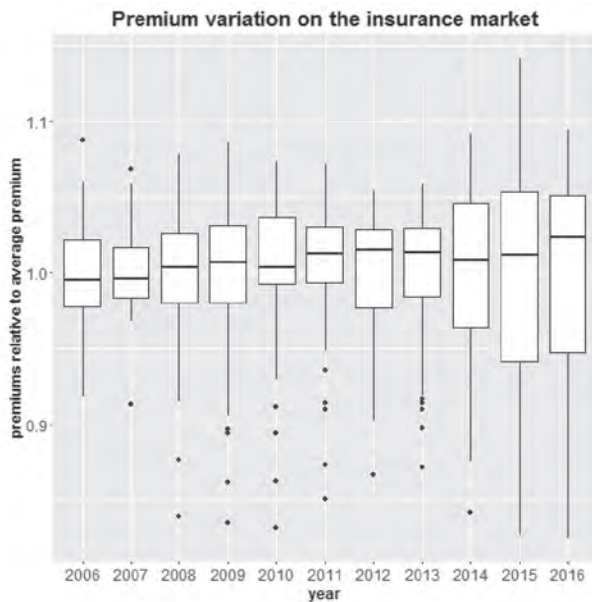


Figure 8: premium dispersion on the health insurance market.

However, as figure 9 shows (below), the percentage of the population that switched has increased slightly, but seems to have remained relatively stable since 2012.<sup>54</sup>

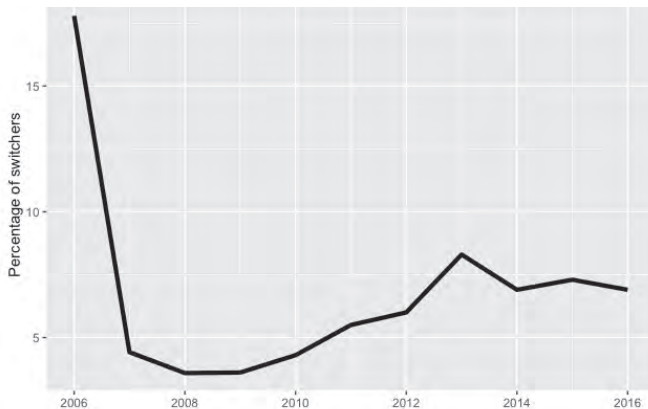


Figure 9: Percentage of switchers on the health insurance market. Source NZa-data.

<sup>54</sup> The high percentage of switching 2006 is caused by the introduction of the new system in 2006.

The number of health plans has broadly increased since 2006. In 2016, the number of plans fell by ten. Frank and Lamiraud (2009) show that the more choice there is between health plans, the less likely consumers are to switch. They find a negative relationship between the number of plans and the competitiveness of the market. In one model, they find that in Swiss cantons where consumers can choose between more than 55 plans, switching is significantly lower than in cantons with less choice. We cannot repeat such a study in the Netherlands, due to the fact we do not have regional variation.

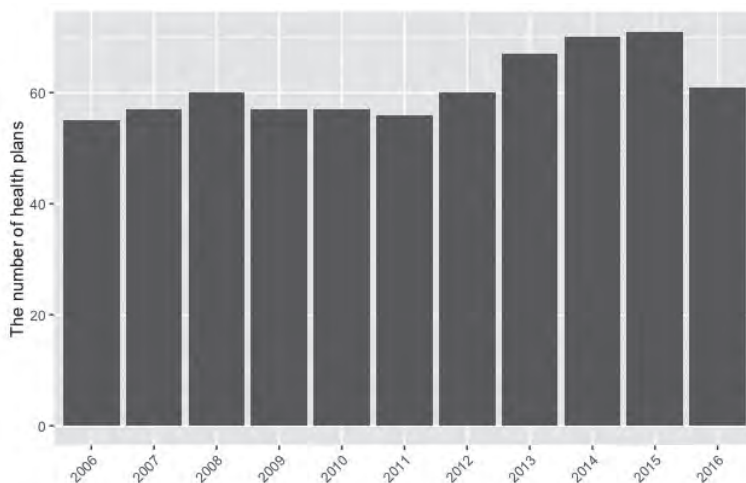


Figure 10: the number of health plans per year. Source NZa-data

Finally, we can look at the net profit margin of health insurers in comparison to other insurance sectors. While the net margin (excluding investment profits) of the total damage insurance sector (excluding health insurance) has fallen over the years, the net margin of health insurers has increased. Since 2012, the net margin in the damage insurance sector has been negative. The health insurance sector<sup>55</sup> started with negative net margins at the time of the reforms of 2006. However, net margins increased and the health insurance sector has been profitable since 2009.

<sup>55</sup> Part of the damage insurance sector, but excluded from the data of the damage insurance sector in Figure 11.

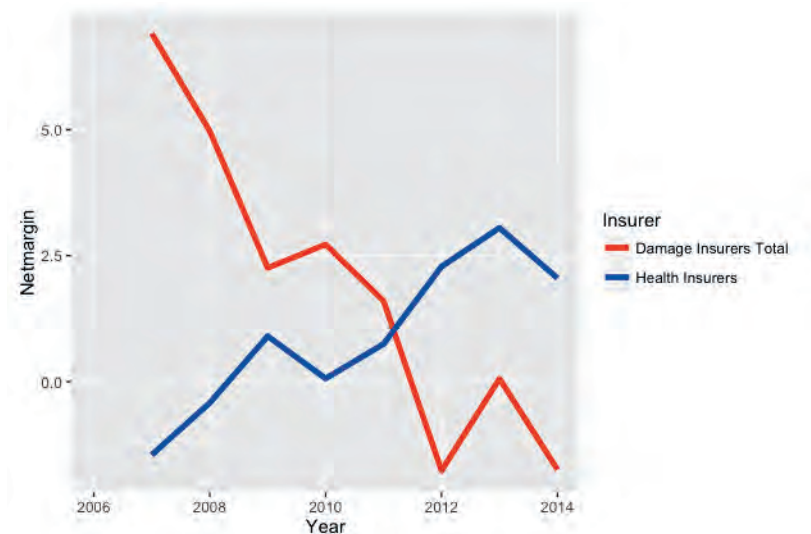


Figure 11: Net margins (net profit excluding profits on investment, as a percentage of gross premiums) of health insurers versus the net margins of the damage insurers (entire sector, excluding health insurance).

Source: Dutch Central Bank<sup>56</sup>

The trends presented in this paragraph can be summarized as follows:

1. the market is concentrated
2. a small number of insurers offer many plans
3. price dispersion is increasing
4. switching is not increasing
5. profits are increasing (in relation to other categories of insurance)

All these developments together make it plausible that the health insurance market is becoming less competitive.

Loozen et al. (2016) conclude that hospitals, pharmacies and general practitioners have market power; nevertheless, insurers may still have bargaining power in relation to paramedical professionals. This bargaining power may have negative welfare consequences, because the quality of medical professionals may deteriorate.

<sup>56</sup> See <http://www.dnb.nl/statistiek/statistieken-dnb/financiele-instellingen/verzekeraars/toezichtgegevens-verzekeraars/index.jsp>

The health insurance market could benefit from greater transparency. For example, it is currently often unclear to consumers how certain choices can affect their deductibles and/or co-payments if they choose healthcare providers outside their insurer's contracted network.

Consumers may find it easier to choose an appropriate plan if their choice were clearer. For example, plans could be categorized into plans with access to all providers, plans with broad access and plans with narrow access.<sup>57</sup> Finally, firms offer identical plans under different names and at different prices. I would argue that a legal requirement for insurers to actively inform consumers if they offer a similar plan at a cheaper price would also increase the competitiveness of the health insurance market.

### Hospital market

Although we have no way of measuring market power in the insurance market directly, new tools for measuring market power in the hospital markets have been developed, of which the Option Demand Method (Capps et al. 2003) and the LOCI method (see Antwi et al. 2013) would seem to be the most robust (See Garmon 2015 for a discussion and application of all methods in the context of merger simulation). Since the estimates of the Option Demand Method and the LOCI produce similar results when applied to the Netherlands (see Kerstholt et al. 2009), I will use the LOCI method to determine the weighted market share,<sup>58</sup> which is presented in Figure 12.

Figure 12, below, shows that the hospital market in the Netherlands is concentrated. Many hospitals have a market share of over 55% and are assumed to have market power<sup>59</sup>. Although many hospitals do have market power, there is no correlation between weighted market share and hospital prices at the present time<sup>60</sup>. Health insurers and hospitals have only been able to negotiate on large portions of production since 2012. The individual negotiations between health insurers and hospitals seem to be greatly influenced by a national agreement between the associations of health insurers, hospitals and the government,

---

<sup>57</sup> Plans in which access to a small group of providers requires extra co-payments.

<sup>58</sup> Defined as 1-LOCI.

<sup>59</sup> The Dutch Healthcare Market Regulation Act (WMG) states it is plausible that hospitals with a market share with a market share above 40% have market power. Hospitals with a market share above 55% are assumed to have market power.

<sup>60</sup> Halbersma et al. (2011) found a correlation between concentration and prices in the period just after the reform. That correlation disappeared in later years.

which stipulates that healthcare costs could only increase by 2.5% per year in real terms.<sup>61</sup>

The effect of competition on quality is less clear, because data on the quality provided is scarce. Bijlsma et al. (2013) find that “competition among hospitals (...) explains differences in several process indicators, but fails to explain differences in outcome indicators”.

However, the hospital market in the Netherlands is very concentrated. The international literature<sup>62</sup> suggests that concentration and mergers lead to higher prices. The effect of concentration and mergers on quality is less clear. In some studies, greater competition leads to better quality, while in other studies it leads to a deterioration in quality.

---

<sup>61</sup> <https://www.rijksoverheid.nl/documenten/besluiten/2011/07/05/bestuurlijk-hoofdlijnenakkoord-2012-2015>

<sup>62</sup> For a literature overview both on price and quality Gaynor and Town (2012).



# An international comparison

### An international comparison

Now that we have discussed the specifics of the Dutch healthcare system, I would like to compare the outcomes of the Dutch system to the outcomes of other healthcare systems in other countries. The data used in this paragraph were compiled by the OECD.<sup>63</sup> Outcomes of healthcare and healthcare systems are difficult to measure. Furthermore, many factors can influence health status, and the healthcare system is only one of these factors. Education and the composition of the population are examples of other factors that influence the health status of a particular country's population. International comparisons are also difficult, because countries often define and compile data differently.

In this section, I would like to compare countries on indicators that may indicate something about the objectives of healthcare systems:

- affordability
- quality
- accessibility

### Affordability

The total cost of healthcare as a percentage of Gross Domestic Product (GDP) is often used in international comparisons as an indicator of the affordability of a healthcare system. In this address, we are mainly interested in the Dutch mandatory health insurance system ("the second pillar"). Since the Netherlands has a very expensive system of long-term care (see Ewijk et al. 2013), I will not use the total cost of healthcare as an indicator of affordability. Instead, I will – following van Ewijk et. al (2013) – use curative costs per capita (defined as the sum of cost categories, curative and rehabilitative care services, ancillary healthcare services and medical goods) as an indicator of healthcare affordability.

---

<sup>63</sup> See for the source data used in this paragraph: <http://www.oecd.org/els/health-systems/health-data.htm>



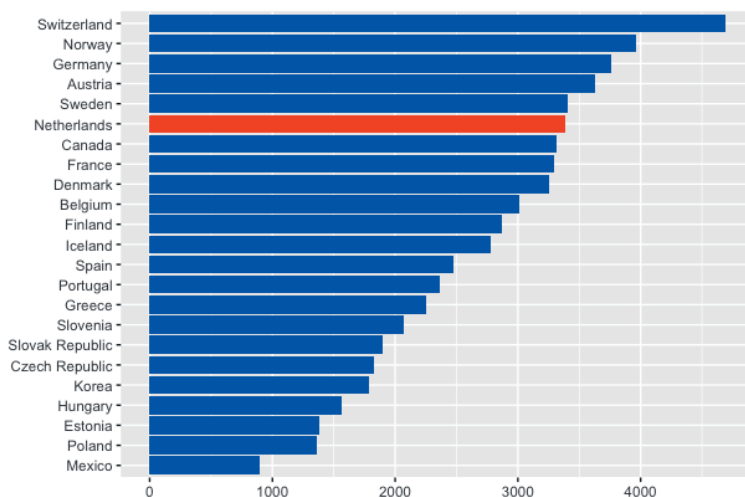


Figure 13: The curative cost per capita in PPP (purchasing power parity) in 2013.

The figure shows that Switzerland had the highest curative costs per capita in 2013. In general, the countries of Western Europe have higher costs than Eastern European Countries. Costs in the Netherlands are comparable with countries like Germany, Sweden, France and Denmark, while Belgium and Finland are slightly cheaper.

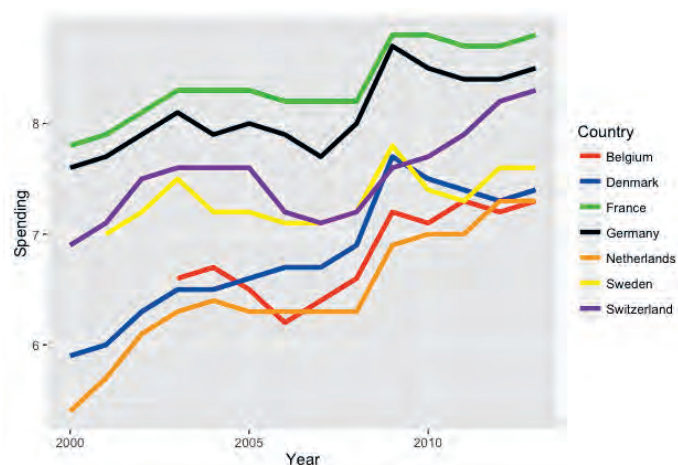


Figure 14: Spending on curative healthcare<sup>64</sup> as a percentage of GDP (Gross Domestic Product)

<sup>64</sup> Curative healthcare is defined as the of spending on Services of curative and rehabilitative care, Ancillary services to healthcare and medical goods.

The figure shows spending on curative healthcare as a percentage of GDP for a group of comparable countries. As a percentage of GDP, healthcare spending in the Netherlands is lower than many others. Furthermore, it is noticeable that countries follow very similar patterns in healthcare spending, regardless of which system they have in place.

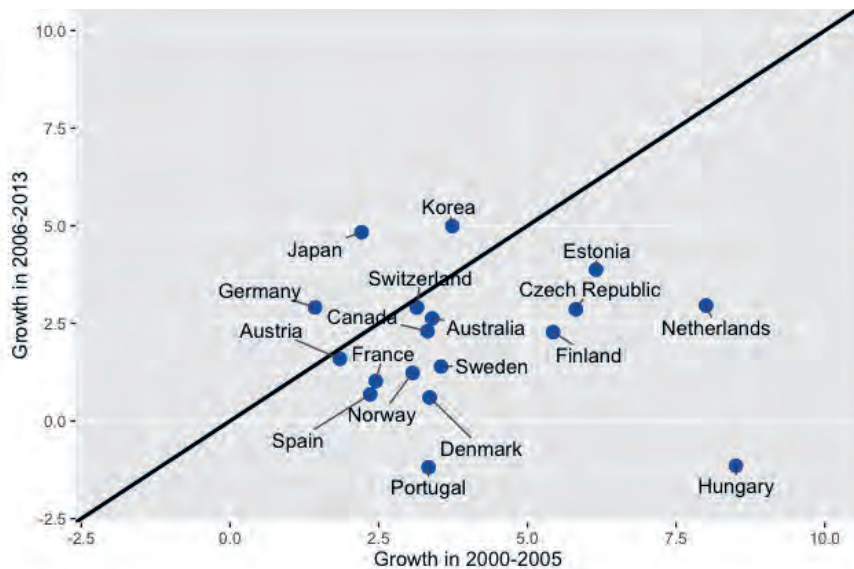


Figure 15: growth of healthcare spending before and after the reform in the Netherlands

Many people in the Netherlands think that the healthcare reform in 2006 led to an increase in costs. However, the figure above shows that in fact the increase in costs was higher in the period 2000-2005 than in the period 2006-2013. The same is true of most countries, but the Netherlands, Hungary and Portugal reduced their increase in healthcare spending the most. In the period 2006-2013, the Netherlands had a similar percentage of growth as the Czech Republic, Finland, Sweden, Australia, France, Austria and Canada. All these countries have very different healthcare systems, yet this does not seem to have had much impact on the cost increases.

### Quality

As a measure of quality, I will use life expectancy at birth. This is the broadest indicator of the performance of a healthcare system for the dimension of

quality. Life expectancy is not influenced by the healthcare system alone, however. Non-medical determinants of health (such as education, life style and behavioral factors) are also important. However, healthcare spending does have an impact on the life expectancy. Cutler et al. (2006) assume – based on earlier literature – that 50 percent of improvements in longevity are contingent on medical care.

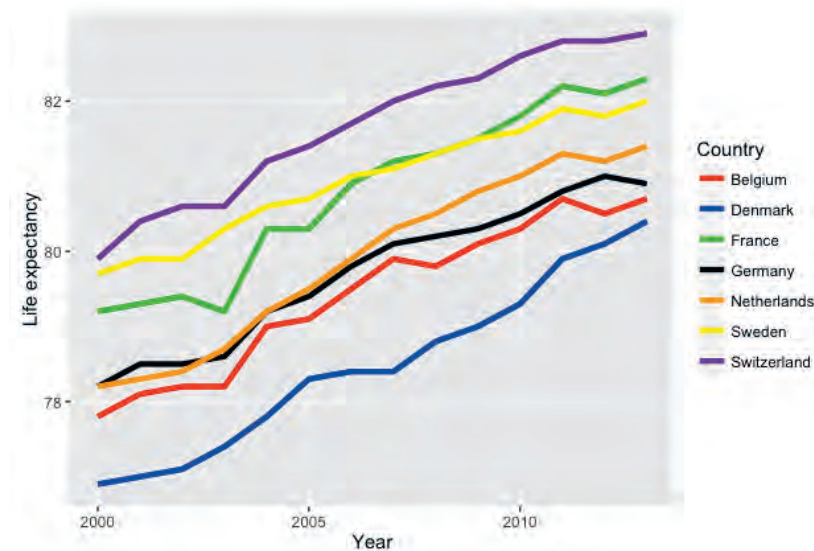


Figure 16: Life expectancy at birth, total population<sup>65</sup>

In the section on affordability, we saw that the cost of healthcare has increased in all countries. From the figure above, we see that the life expectancy also increased in all the countries presented. Again, all countries seem to follow a similar trend. The Netherlands ranks as an average country in the group of countries presented above.

### Accessibility

Access to healthcare is an important public policy objective. As an indicator for access, we use the percentage of people that report that they have not received the care they needed because they could not afford it, there were waiting lists, or they had to travel too far.

<sup>65</sup> Source OECD health data base, [http://stats.oecd.org/index.aspx?DataSetCode=HEALTH\\_STAT](http://stats.oecd.org/index.aspx?DataSetCode=HEALTH_STAT)

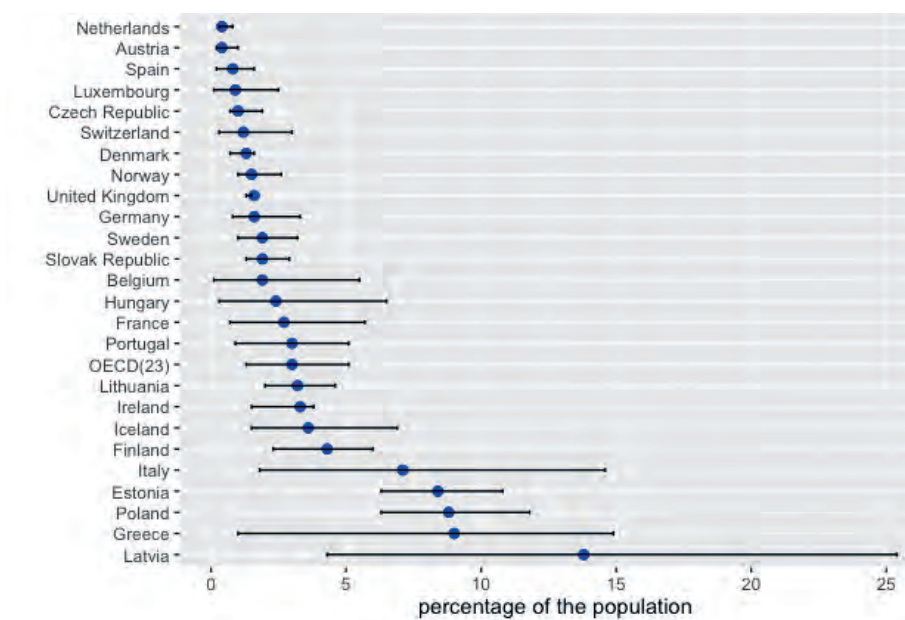


Figure 17: Unmet demand for care for medical examination, by income level, 2013; order: high income, national average, low income.<sup>66</sup>

From the figure above, we can see that the Netherlands scores very well on this indicator. Although competition in healthcare is often associated with lower solidarity, the Netherlands seems to have a system with good solidarity. Not only is the percentage of people that do not receive the treatment they need low, in the Netherlands differences between people on a low income and those on a higher income are also very low. Obviously, the fact that the Netherlands is a densely populated country is an important factor that contributes to lower travel times. But the Netherlands also scores well on other aspects (financial accessibility and waiting lists).

<sup>66</sup> Figure reproduced from OECD (2015)

### Integrated view

In the above sections, we have compared a selection of OECD countries on different dimensions. We have compared healthcare costs, quality and access. An “ideal” country with the lowest costs and the highest quality and access is unrealistic, so instead we will use Data Envelopment Analysis<sup>67</sup> to compare countries for the year 2013 and compute efficiency scores for each<sup>68</sup>.

In the analysis presented below, we calculate how ‘efficiently’ a country transforms healthcare inputs (in our case the curative costs per capita) into healthcare outputs (in our case life expectancy at birth and accessibility<sup>69</sup>).

Benchmarking is a tool for comparing different organizations or processes. Benchmarking is often done by comparing key performance indicators (KPIs). When comparing different healthcare systems, it is possible to compare countries on different aspects such as cost per capita, quality provided and so on, as has been done above. However, KPI comparison has a few drawbacks. The main drawback is that it remains a partial analysis and does not allow us to draw more general conclusions. There are many types of benchmarking methods (e.g. Correct Ordinary Least Squares (COLS), Stochastic Frontier Analysis (SFA), Stochastic DEA (SDEA) and DEA), each with their strengths and weaknesses.

To compare different healthcare systems, I have chosen to use DEA, because it can handle multiple inputs and outputs, and allows the use of different scale properties.<sup>70</sup> DEA is a benchmarking tool that uses mathematical programming methods to estimate best practice production frontiers to evaluate the relative efficiency of different organizations (Bogetoft 2013).

An efficiency score of 0.5 means that a country could achieve the same outputs with only 50% of the costs. An efficiency score of 1 means that no other countries can produce the same output for lower costs.

---

<sup>67</sup> See Bogetoft and Otto (2010) for a more detailed consideration of benchmarking models and the benchmarking packages in R that I have used for these computations.

<sup>68</sup> This analysis is not a scientific exercise, but should be regarded as an illustration.

<sup>69</sup> I define access here as 100 – the average percentage of people that reported unmet care due to financial reasons, waiting lists and travel time.

<sup>70</sup> For this analysis I have used the Variable Returns to Scale (VRS) assumption.

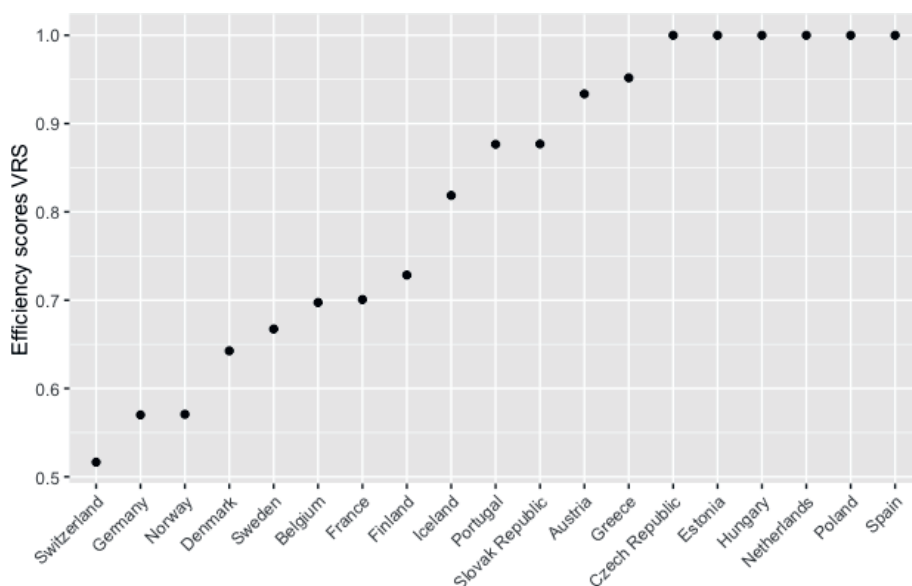


Figure 18: Efficiency scores of different healthcare systems

The Netherlands has an efficiency score of 1, meaning that our system performs very well in comparison to the other healthcare systems for the dataset that was analyzed. This is mainly due to the fact that the Netherlands has the best access to healthcare.

It is noticeable that most western European countries (with the Netherlands and Spain being exceptions) have low efficiency scores. These scores could be due to higher salaries for doctors (because of the generally higher income levels in these countries). The efficiency scores can be explained by the salaries of the doctors.

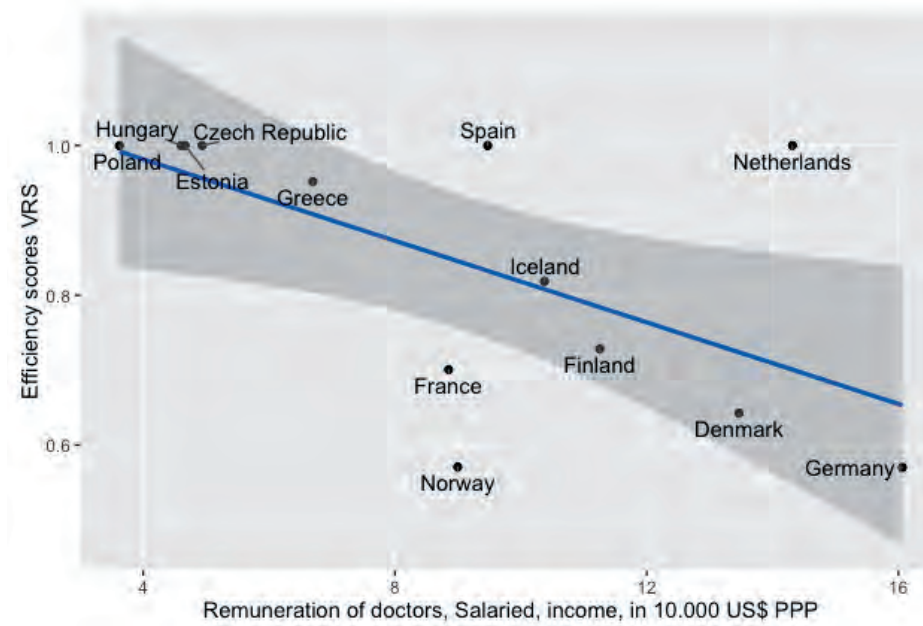


Figure 19: Salaries of doctors and efficiency scores

The income received by doctors seems to have a major impact on healthcare costs; they are particularly high in the Netherlands, Denmark and Germany.





How to improve the  
Dutch healthcare system?

The Dutch system is, in conceptual terms, a very good idea, because it combines solidarity (every citizen has access to healthcare) with competition. Delegations from all over the world visit the Dutch Healthcare Authority to learn about our system.

We have compared the performance of the Dutch system to that of other countries. Although the Dutch system does not perform badly, it is hard to conclude that one type of system is intrinsically better than another. Many countries with different healthcare systems seem to be susceptible to similar developments with respect to rising costs and life expectancy.

Just because our system is satisfactory in conceptual terms and many countries are interested in emulating it, this does not mean our system is perfect. In this section, I will present a number of suggestions for improvement.

The main problem in the Netherlands (as in most countries) is the lack of information about the outcomes of healthcare interventions. This lack of information is a problem because patients are not able to choose the providers that achieve the best outcomes. If patients were able to choose on the basis of such information, doctors would have a greater incentive to learn from each other and improve. Information about the outcome of healthcare interventions may also make patients more willing to travel to receive care, and this could reinforce competition between providers.

Another – associated – problem is that insurers and the government do not base their contracts and regulation on healthcare outcomes. Instead, they pay for interventions and curb costs by means of budgets. These payment methods lead to both under- and over treatment. Payments based on healthcare outcomes would improve performance in the healthcare system. There has been some progress in the Netherlands during recent years, but an evaluation of the Dutch Healthcare Market Regulation Act (WVG)<sup>71</sup> indicates that there has been too much focus on the goal of affordability and too little focus on the goals of quality and access.

---

<sup>71</sup> [https://www.nza.nl/1048076/1048181/Rapport\\_AEF\\_\\_Evaluatie\\_Wet\\_Marktdeniging\\_Gezondheidszorg\\_en\\_de\\_Nederlandse\\_Zorgautoriteit.pdf](https://www.nza.nl/1048076/1048181/Rapport_AEF__Evaluatie_Wet_Marktdeniging_Gezondheidszorg_en_de_Nederlandse_Zorgautoriteit.pdf)

Of course, health outcomes are difficult to measure. However, the International Consortium for Health Outcomes Measurement (ICHOM)<sup>72</sup> has developed standardized indicators for health outcomes for a number of diseases. I would recommend that research should be done into how these indicators could be used in the Netherlands.

Some patients might have difficulty understanding and interpreting information about the quality of care. It would be a good idea to put in place a system whereby general practitioners help their patients to choose.<sup>73</sup> Since the prices of GPs are regulated, a change in the regulatory regime may be necessary.

Providers that achieve better value (which includes the aspects of quality and cost) should be better-off. Value does not play any role in most insurers' contracts and in the regulation of prices by the government. A further challenge for the coming years is to move towards a system that rewards providers for generating good value, rather than a system that rewards intervention, which we currently have.

As mentioned above, the risk adjustment scheme undercompensates some groups of people with health problems and overcompensates healthy individuals. Less compensation for healthy people would give insurers a greater incentive to invest in better healthcare for those who need healthcare.

The organization and financing of healthcare is based on institutions (e.g. hospitals, home care organizations and so on). Patients often have to contend with multiple problems at the same time (take, for example, an 80-year-old woman with diabetes and breast cancer who is married to an 85-year-old man with Parkinson's disease). Treating one problem may affect other problems and the couple's home situation. In order to improve coordination and healthcare outcomes, I think that a further move towards bundled payments is necessary. We have seen such a shift already, recently, for chronic diseases such as COPD and diabetes as well as for natal care.

---

<sup>72</sup> <http://www.ichom.org/>

<sup>73</sup> For example like the choose and book website in the UK. See Gaynor et al. (2012)

Since our system is based on competition between insurers and competition between providers, I would argue for stricter controls on mergers and greater transparency in the insurance market

Our healthcare system has now existed in its current form for 10 years. The first 10 years of system was devoted to deregulation and decentralizing decision-making powers to insurers and providers. It is now time to focus on the outcomes of our healthcare system.

Words of gratitude

*Let me conclude with some words of gratitude.*

I am very grateful to the board of NZa and in particular to Marian Kaljouw for establishing the endowed chair. I would like to thank the board of Tilburg University and the appointment committee for their appointment. Willem Meegens helped a great deal with fulfilling the administrative requirements. I would like to thank Urmila Bihari (NZa) and Sylvia Hoyinck (Tilburg University) for the help they provided in the organization of the inaugural address.

Jan Boone, as dean of the Department of Economics of the Tilburg School of Economics and Management, played a major role in the establishment of the chair and my appointment.

I'm very proud and happy to be able to work with you.

I would also like to thank all of my co-authors for their academic work. I appreciate the opportunity to be able to work with my great EMB-colleagues. Some of my co-authors have become more than just colleagues: Mark, Gustaaf, Katalin and Rein, it has been an enormous pleasure to work with you and I hope we may continue to do so.

Of my colleagues, I work very closely with Ramsis. He is always relaxed, very skillful and full of jokes and good humor, it is a privilege to work with him.

Victoria, my first academic partner in 2001, has become a very special friend of our family. I'm delighted that she joined NZa two years ago, so that we can work together again. I would like to thank her for her collaboration and her friendship. She was a great help with discussing and reading this address. Ramsis and Katalin also contributed to this inaugural address with comments, help and discussion.

I would like to express my gratitude to Peter Bogetoft and Wijbrand Bins for being my mentors up until today. I have learned a lot from both of you about life in general and economics in particular. Peter Bogetoft gave me some sound advice on the benchmarking section.

I'm indebted to my family, and to Menna, Anke and Henk in particular for all their love and support. Without their help, this appointment would not have been possible.

Finally, I would like to express my deepest gratitude to Sandra, Arvid, Finn and Silas. Sandra, you are the most beautiful thing that has ever happened to me. You and the boys are the most important thing in my life.

Ik heb gezegd.





# References

Antwi, Y. O. D. A., Gaynor, M., & Vogt, W. (2013). *A Competition Index for Differentiated Products Oligopoly with an Application to Hospital Markets*. working paper.  
[http://www.cla.auburn.edu/economics/assets/File/AntwiGaynorVogt\\_Loci.pdf](http://www.cla.auburn.edu/economics/assets/File/AntwiGaynorVogt_Loci.pdf)

Aron-Dine, A., Einav, L., & Finkelstein, A. (2013). The RAND health insurance experiment, three decades later. *The Journal of Economic Perspectives*, 27(1), 197-222.

Agrell, P. J., Bogetoft, P., Halbersma, R., & Mikkers, M. C. (2007). *Yardstick competition for multi-product hospitals* (No. 01-2007).

Akerlof, G.A. (1970). The Market for “Lemons”: Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, Vol. 84, No. 3., pp. 488-500.

Arrow, K.J. (1963) Uncertainty and the welfare economics of medical care. *The American economic review* 53.5: 941-973.

Arrow, K. J., & Debreu, G. (1954). Existence of an equilibrium for a competitive economy. *Econometrica: Journal of the Econometric Society*, 265-290.

Auster, R. D., & Oaxaca, R. L. (1981). Identification of supplier induced demand in the health care sector. *Journal of Human Resources*, 327-342.

Beaulieu, N., Cutler, D. M., Ho, K., Isham, G., Lindquist, T., Nelson, A., & O'Connor, P. (2006, December). The business case for diabetes disease management for managed care organizations. In *Forum Health Econ Policy* (Vol. 9, No. 1, pp. 1-37).

Bogetoft, P., & Otto, L. (2010). *Benchmarking with Dea, Sfa, and R* (Vol. 157). Springer Science & Business Media.

Bogetoft, P. (2013). *Performance benchmarking: Measuring and managing performance*. Springer Science & Business Media.

Bijlsma, M. J., Koning, P. W., & Shestalova, V. (2013). The effect of competition on process and outcome quality of hospital care in the netherlands. *De Economist*, 161(2), 121-155.

Capps, C., Dranove, D., & Satterthwaite, M. (2003). Competition and market power in option demand markets. *RAND Journal of Economics*, 737-763.

Cutler, D. M. (2002). Equality, efficiency, and market fundamentals: the dynamics of international medical-care reform. *Journal of economic literature*, 40(3), 881-906.

Cutler, D. M., Rosen, A. B., & Vijan, S. (2006). The value of medical spending in the United States, 1960–2000. *New England journal of medicine*, 355(9), 920-927.

Department of Justice (DOJ) and the Federal Trade Commission (FTC) (2004). A dose of competition.

<https://www.ftc.gov/sites/default/files/documents/reports/improving-health-care-dose-competition-report-federal-trade-commission-and-department-justice/040723healthcarerpt.pdf>

Docteur, E., & Oxley, H. (2003). Health-care systems: lessons from the reform experience. OECD Health Working Papers.

[http://www.cluxury.com/yahoo\\_site\\_admin/assets/docs/ishealthcareluxurygood2003.7793854.pdf](http://www.cluxury.com/yahoo_site_admin/assets/docs/ishealthcareluxurygood2003.7793854.pdf)

Dranove, D. (2003). *What's Your Life Worth?: Health Care Rationing--who Lives? who Dies? who Decides?*. FT Press.

Dranove, D. (2012). Health care markets, regulators, and certifiers. *Handbook of Health Economics*, 2, 639-690.

Ellis, R. P. & W.P.P.M. van de Ven (2000). Risk adjustment in competitive health plan markets. *Handbook of health economics*, 1, 755-845.

Ewijk, C., Horst, A., & Besseling, P. (2013). *Toekomst voor de zorg* (No. 7). Centraal Planbureau (CPB).

<http://www.cpb.nl/publicatie/toekomst-voor-de-zorg>

Frank, R. G., & Lamiraud, K. (2009). Choice, price competition and complexity in markets for health insurance. *Journal of Economic Behavior & Organization*, 71(2), 550-562.

Garmon, C. (2015). The Accuracy of Hospital Merger Screening Methods. *FTC working paper series no 326*, [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2652812](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2652812)

Gaynor, M., & Vogt, W. B. (2000). Antitrust and competition in health care markets. *Handbook of health economics*, 1, 1405-1487.

Gaynor, M., & Town, R. (2012). Competition in health care markets. *Handbook of health economics*, 2, 499-637.

Gaynor, M., Propper, C., & Seiler, S. (2012). *Free to choose? Reform and demand response in the English National Health Service* (No. w18574). National Bureau of Economic Research.

Halbersma, R. S., Kerstholt, W., & Mikkers, M. C. (2009). Marktafbakening en marktmacht in de zorgsector. *Markt en Mededinging*, 12(2), 74.

Halbersma, R. S., Mikkers, M. C., Motchenkova, E., & Seinen, I. (2011). Market structure and hospital-insurer bargaining in the Netherlands. *The European Journal of Health Economics*, 12(6), 589-603.

Halm, E. A., Lee, C., & Chassin, M. R. (2002). Is volume related to outcome in health care? A systematic review and methodologic critique of the literature. *Annals of internal medicine*, 137(6), 511-520.

Holt, C. A., & Sherman, R. (1999). Classroom games: A market for lemons. *The Journal of Economic Perspectives*, 13(1), 205-214.

van Kleef, R.C, Schut, F.T, & van de Ven, W.P.M.M. (2014). Evaluatie Zorgstelsel en Risicoverevening. Acht jaar na invoering Zorgverzekeringswet: succes verzekerd?. Retrieved from <http://hdl.handle.net/1765/77339>

Van Kleef, R. C., Van Vliet, R. C., & Van de Ven, W. P. (2013). Risk equalization in The Netherlands: an empirical evaluation. *Expert review of pharmacoeconomics & outcomes research*, 13(6), 829-839.

Lim, M. K. (2004). Shifting the burden of health care finance: a case study of public-private partnership in Singapore. *Health Policy*, 69(1), 83-92.

- Loozen, E., Varkevisser, M., & Schut, E. Goede zorginkoop vergt gezonde machtsverhoudingen.  
[http://www.bmg.eur.nl/fileadmin/ASSETS/bmg/Onderzoek/Onderzoeksrapporten\\_Working\\_Papers/2016/Onderzoeksrapport\\_Goede\\_zorginkoop\\_gezonde\\_machtsverhoudingen.pdf](http://www.bmg.eur.nl/fileadmin/ASSETS/bmg/Onderzoek/Onderzoeksrapporten_Working_Papers/2016/Onderzoeksrapport_Goede_zorginkoop_gezonde_machtsverhoudingen.pdf)
- Maarse, J. H., & Jeurissen, P. P. (2016). The policy and politics of the 2015 long-term care reform in the Netherlands. *Health Policy*, 120(3), 241-245.
- Milgrom, P., & Roberts, J. (1992). *Economics, organization and management*. Prentice-Hall International.
- Mikkers, M., & Ryan, P. (2014). “Managed competition” for Ireland? The single versus multiple payer debate. *BMC health services research*, 14(1), 442.
- Motta, M. (2004). *Competition policy: theory and practice*. Cambridge University Press.
- Newhouse, J. P. (2004). Consumer-directed health plans and the RAND Health Insurance Experiment. *Health Affairs*, 23(6), 107-113.
- NZa (2016) Marktscan Zorgverzekeringsmarkt 2015 (update mei 2016)  
[https://www.nza.nl/1048076/1048181/Marktscan\\_Zorgverzekeringsmarkt\\_2015\\_update\\_mei\\_2016.pdf](https://www.nza.nl/1048076/1048181/Marktscan_Zorgverzekeringsmarkt_2015_update_mei_2016.pdf)
- OECD (2015), *Health at a Glance 2015: OECD Indicators*, OECD Publishing, Paris.  
 DOI: [http://dx.doi.org/10.1787/health\\_glance-2015-en](http://dx.doi.org/10.1787/health_glance-2015-en)
- Pomp, M. (2010). *Een beter Nederland: de gouden eieren van de gezondheidszorg*. Balans.
- Salkever, D. S. (2000). Regulation of prices and investment in hospitals in the United States. *Handbook of health economics*, 1, 1489-1535.
- Shleifer, A. (1985). A theory of yardstick competition. *The RAND Journal of Economics*, 319-327.



## Colofon

*copyright*

**Misja Mikkers**

*vormgeving*

**Beelenkamp ontwerpers, Tilburg**

*fotografie omslag*

**Maurice van den Bosch**

*druk*

**PrismaPrint, Tilburg University**





